WRIGHT-PATTERSON AIR FORCE BASE, AREA B, BUILDING 71A, PROPULSION RESEARCH LABORATORY, AIR BREATHING
DAYTON VIC.
GREENE COUNTY
OHIO

HAER No. OH-79-AY

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
P.O. Box 37127
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HISTORIC AMERICAN ENGINEERING RECORD

WRIGHT-PATTERSON AIR FORCE BASE, AREA B,
BUILDING 71A, PROPULSION RESEARCH LABORATORY, AIR BREATHING
HAER No. OH-79-AY

Location:	Along 7th Street between D and G Streets; Wright-Patterson Air Force Base, Area B, Dayton Vicinity, Greene County, Ohio.
Dates of Construction:	1939-42.
Architect:	U.S. Army Quartermaster.
Construction Contractor:	Ferro Concrete Construction Co., Cincinnati, OH.
Present Owner:	USAF.
Present Use:	Space power environment chamber, Laser Hardened Materials Evaluation Laboratory, and Sea Level Engine Test Cell.
Significance:	Building 71A is part of the Power Plant Laboratory Complex, the site of essential aircraft engine research and development, particularly during the 1930s and '40s. It was built to expand the complex's capabilities due to the increased research demands of World War II.
Project History:	This report is part of the overall Wright-Patterson Air Force Base, Area B documentation project conducted by HAER 1991-1993. See overview report, HAER No. OH-79, for complete description of the project.

DESCRIPTION: Building 71A is a large cast-in-place concrete building with twin square towers and a connecting building that has horizontal grooves incised across the facade and flat roofline. The structure comprises four test cells with control rooms. Each two-cell unit measures 95' x 169' x 60' with 20-22" thick walls and a roof of inverted beam and slab construction to give a smooth ceiling. Multi-paned, steel-sashed awning windows are on the first floor only. The second story (a later addition) is made of smooth concrete. Large hangar doors open vertically.

HISTORY: Four additional engine torque stands (A to D) were built between 1939 and 1942 for testing more powerful engines producing more propeller thrust than could be accommodated in the seven test cells already in Building 71. The whole structure was designated Building 71A. The stands were designed by the office of the U.S. Army Quartermaster; Ferro Concrete Construction Co., of Cincinnati, Ohio, was the contractor. In 1945 the stands were modified for gas turbine engine testing, with A and B configured for turbo-prop engines and C and D for turbo-jet engines. Bay B was modified further, first in 1960-61 when it was converted to an arc jet test facility for testing electro thermal propulsion devices with up to 10 lbs. thrust in near space environments; ten years later the facility became part of a laser systems laboratory, and was rebuilt in 1976-77 for testing turbo-fan engines. In 1963-65 Bay A was stripped and a space power environment chamber installed, designed to test liquid metal thermionic and thermoelectric generator modules and evaluate high temperature system components in space environments. Since 1985 Bays B and C have been on loan to the Wright Lab Materials Directorate's Laser Hardened Materials Evaluation Laboratory, in conjunction with Acurex Corporation and Universal Energy Systems. Bay D retains its use as a Sea Level Engine Test Cell.

For bibliography, see Wright-Patterson Air Force Base overview report (HAER No. OH-79).